Scoping Meeting
Proposed Agenda

Introduction - EPA

Site History, Sources of Contamination, and Setting CH2M HILL (5 minutes)

Previous Investigations – CH2M HILL (5 minutes)

Preliminary RI/FS Objectives and Proposed RI/FS Approach – CH2M HILL (10 minutes)

Proposed Work Plan Approach and Scope – CH2M HILL (15 minutes)

- Task 3 Remedial Investigation
- Task 5 Data Management
- Task 6 Human Health Risk Assessment
- Task 6 Ecological Risk Assessment
- Task 2 Community Relations
- Task 5 Analytical Support and Data Validation

Discussion - ALL

Site History, Sources of Contamination, and Setting

Site History and Sources of Contamination

- Former oil refinery - 1941 - 1979
- Over the years, 3 areas of operations or source areas developed:
  - Landfill – approx. 7 acres
  - Oil refinery – 2 buildings, aboveground tanks, drum areas, underground pits
  - Oil lagoon –approx. 5 acres & extending outside site boundaries to the E & S
- In early 80s, NJDOT removed oil & sludge from lagoon during highway expansion
- Current owner (HMDC) would like to use the site for an office building

Site Setting

Site location and setting

- Total area - approx.15 acres, smaller area is currently fenced
- Currently inactive bordered by roadways and a salvage/disposal operation
- Surrounding area - industrial, no residential areas in vicinity
- HRS Package states that there are no public supply wells within 4 miles and therefore, did not score the groundwater pathway
- The general borders of the 3 former operational areas are still noticeable
- Remaining are the foundations of two of the ASTs and one of the buildings
- Covered with heavy! vegetation (Phragmites up to 12 feet tall over approx. 70% of site; difficult access)

Topography

- Flat over the east (refinery/lagoon) area and the west (between landfill and PSE&G ROW) area with change in elevation at landfill boundary (landfill surface appears 10 to 15 feet above east and west boundaries)

Surface water

- Standing water currently present over small areas with evidence of flooding over larger areas - Ground is soft in those areas! No apparent sheen on water surface.
- Oil sheen along bank of drainage channel at SE corner of the site, but not in standing water – unclear whether site or neighboring operations are the source. Small fish in drainage channel leaving southwest corner of site – no apparent water flow at time of site visit.

Geologic and hydrogeologic information

- Site geology (based on shallow borings installed at the site) consists of varying thickness of fill material overlying native sands and clays.
- A layer of peat and/or organic silt and clay present in most borings 14 - 18 ft bgs.
- Groundwater is shallow - approx. 1 - 2 feet bgs

- Groundwater flow suggested to be to the west
- Free product - 0.6 feet thick – present in monitoring well MW-3 in former lagoon; product noted in this well during previous investigations
- Two other wells (MW-5 in the landfill and MW-2 in northeast portion of the site) were located during the site visit, and did not contain product

Previous Investigations

Four investigations have been conducted

NJDEP – 1985

- Analytical data is available, but analyses were not performed through CLP and data is not validated
- Recommend that data be used as an indication of the presence of contamination but not as part of the RI/FS decision-making process

Killam Associates – 1990, Investigation performed for HMDC

- Performed geophysical survey (EM-31) with measurements at 25' – no indication of buried drums
- Performed soil gas survey (OVA & Hnu) - indicated predominantly methane with isolated areas with VOCs
- Analytical data is not available, analyses were not performed through CLP, and data is not validated
- Recommend that data be used as an indication of the presence of contamination but not as part of the RI/FS decision-making process

EPA 1991 Site Inspection

- Collected 4 groundwater, 3 surface water and sediment, 7 surface soil, 1 subsurface soil, 3 liquid waste, and 2 solid waste samples
- Exact locations unknown, general locations shown on Figure 3
- Analyses were performed using CLP procedures and data is validated
- CH2M HILL does not have laboratory data package, but it is available
- Recommend that we obtain data, review for quality, and use it as part of the RI/FS decision-making process.
- Although exact sampling locations are unknown, general area where samples were collected is known. Since site has been subject to filling and grading, contamination within a general area (e.g., landfill area, former refinery) is expected to be the same. Access to GPS/survey information for sampling points would improve usability of the data.

EPA 1999 Supplemental Site Inspection

- Installed 20 soil borings (2 samples / boring) and collected 18 sediment samples (3 background)
- Exact locations unknown, general locations shown on Figure 3
- Analyses were performed using CLP procedures and data is validated
- Laboratory data package is available for the sediment samples; CH2M HILL chemist reviewed and determined data to be useable

- Recommend that we obtain the soil data and review for quality, and use both soil and sediment data as part of the RI/FS decision-making process
- Same comment on the locations and GPS/survey information

Preliminary RI/FS Objectives

Broad RI/FS Objectives

Obtain data on the nature and extent of the contamination associated with the site, assess the potential human health and ecological risks, and evaluate remedial alternatives.

RI/FS Approach

- Propose to use a two-phased site investigation approach.
- At the end of Phase 1, a Technical Memorandum will present the Phase 1 results to the Agency along with recommendations on the need for and suggested scope for a Phase 2 investigation.

Specific Objectives for Each Investigation Phase

Phase 1 site investigation

- Objectives:
  - Delineate extent of LNAPL and associated contamination in former lagoon area while remaining within the northern and eastern fences, the PSE&G ROW to the west, and the drainage channel to the south
  - Investigate soil contamination (surface and subsurface above the peat/native organic soil layer) in areas where data is not available from previous investigations
  - Investigate soil contamination (surface and subsurface above the peat/native organic soil layer) along the boundaries of the landfill
  - Investigate, via test pitting, the type of waste materials that are found in the landfill
  - Investigate groundwater contamination along the upgradient and downgradient boundaries of the site and along the upgradient and downgradient boundaries of the landfill
  - Investigate surface water and sediment contamination in areas where data is not available from previous investigations

- Approach is to obtain information in areas where there is currently no information and focus on the subsurface soils and groundwater above the peat layer.

- Phase 1 results would be used to determine whether further investigation is needed during a Phase 2 when it *may* be warranted to divide the site into 2 operable units:

one for further investigation of onsite contamination and the second for investigation of offsite groundwater contamination.

Phase 2 site investigation

- *Preliminary* Objectives:

  - Onsite Investigation - Delineate extent of contamination identified during Phase 1 (e.g., investigate conditions within landfill boundaries), investigate groundwater hydrogeologic conditions, and investigate groundwater contamination beneath the peat/native organic soil layer.

  - Offsite investigation - Delineate the extent of any groundwater contamination plume identified to originate from the site based on the Phase 1 results.

- Approach is to develop the specific objectives and scope for Phase 2 based on the Phase 1 results and design Phase 2 such that it supplements the Phase 1 results and collects additional information - only where needed – to meet the established Phase 2 objectives.

- Actual Phase 2 objectives and scope proposed to be developed after Phase 1 is completed

Proposed Work Plan Approach and Scope

Work Plan Approach

- Propose to apply a phased approach to Work Plan preparation paralleling the proposed phased approach for the remedial investigation

- Prepare Phase 1 Work Plan for implementing Phase 1 investigation - through decision on need for and approach for a Phase 2 investigation

- Prepare Phase 2 Work Plan for implementing Phase 2 investigation following completion and review of Phase 1 investigation results when a plausible Phase 2 approach and scope can be developed (i.e., define scope for Phase 2 in a Work Plan Revision Request)

- Include the following tasks through completion of the Phase 1 investigation in the Phase 1 Work Plan

  Task 1 Project planning
  Task 2 Community relations
  Task 3 Remedial Investigation
  Task 4 Sample analysis
  Task 5 Analytical Support and Data Validation
  Task 6 Data Evaluation
  Task 7 Assessment of Risk
  Human Health Risk Assessment – complete
  Ecological Risk Assessment – complete

- If Phase 1 indicates that there is no need for a Phase 2 investigation, develop scope for remaining tasks

  Task 8 Treatability study
  Task 9 Remedial Investigation report
  Tasks 10-12 Feasibility study
  Tasks 13-16 Post RI/FS support and closeout

Summary of Proposed Investigation Activities for the Diamond Head Oil RI/FS
Kearny, NJ

Media	Objective of Sampling Program	Investigation Method	Selection of Sampling Locations	Drilling/ Sampling Method	Number of sampling locations	Depth of Investigation Method	Number of samples per location	Total number of samples	Sample depth	Analysis
LNAPL	Delineate extent of LNAPL and associated contamination in former lagoon area	Install shallow subsurface soil borings, observe visually for LNAPL, use immunoassay, collect soil samples, and install pizometers in the borings to observe for the thickness of LNAPL	Borings to extend radially in 4 directions (N, S, E, W) from well MW-3 where LNAPL is currently present	Rotasonic	Upto 12	To top of pit or approx. max depth 15-20 feet	3	36	- Surface (0-6") - Mid depth - Bottom of boring	- Soil cores will be screened with PID - Field immunoassay analysis - Samples to be analyzed for TCL organics & TAL metals - LNAPL thickness measurements
	Determine the characteristics of LNAPL material	Sample the LNAPL in well MW-3	MW-3	NA	1	NA	1	1	NA	- LNAPL fingerprinting (GRO and DRO) - TCL organics & TAL metals - Hazardous waste characteristics - Full TCLP - Specific gravity OTHER??????? DAVE
Surface and subsurface soil	- Investigate soil contamination (surface and subsurface above the pit layer) in areas where data is not available from previous investigations - Investigate soil contamination (surface and subsurface above the pit layer) along the boundaries of the landfill	Install shallow subsurface soil borings	- Borings in an approximate grid in areas where there is no currently data - Borings along perimeter of landfill where change in slope is noted - Actual locations to be selected in consultation with EPA during a site visit	Rotasonic	21	To top of pit or approx. 15-20 feet	3	63	- Surface (0-6") - Mid depth - Bottom of boring	- Soil cores will be screened with PID - Samples to be analyzed for TCL organics & TAL metals - Samples from 2 borings (one in the lagoon area and one at edge of landfill) tested for engineering parameters
Shallow groundwater	- Investigate groundwater contamination along the upgradient and downgradient boundaries of the site and along the upgradient and downgradient boundaries of the landfill	Install monitoring wells in 9 of the soil borings and screen them above the pit layer	Locations were selected to provide information on groundwater contamination: - along the upgradient boundary of the site - upgradient of the landfill and downgradient of the lagoon area - downgradient of the site	Rotasonic	9	To top of pit or approx. 15-20 feet	NA	NA	NA	
		Develop the existing and new monitoring wells in preparation for sampling	NA	NA	15	To top of pit or approx. 15-20 feet	NA	NA	NA	
		Collect two rounds of water level measurements: one after all monitoring wells are installed and developed and one before groundwater sampling	NA	NA	15	To top of pit or approx. 15-20 feet	NA	NA	NA	

Last Revised:
05/20/2002
8:42 PM

Summary of Proposed Investigation Activities for the Diamond Head Oil RI/FS
Kearny, NJ

Media	Objective of Sampling Program	Investigation Method	Selection of Sampling Locations	Drilling/ Sampling Method	Number of sampling locations	Depth of Investigation Method	Number of samples per location	Total number of samples	Sample depth	Analysis
		Collect one round of groundwater samples from existing and new monitoring wells and LNAPL thickness measurements	Sample using low-flow all existing and new monitoring wells	Low-flow	15	To top of pit or approx. 15-20 feet	1	15	Above pit	- All locations - field parameters, TCL organics & TAL metals - Samples from 2 wells for engineering parameters
Surface water and sediments	- Investigate surface water and sediment contamination in areas where there is currently no information	Sample surface water and sediments at selected locations	Hand	NA	8	Sediment 0-6"	1	8 surface water and 8 sediment		- All locations - field parameters, TCL organics & TAL metals
Landfilled wastes	- Investigate the type of waste materials in the landfill	- Install 8 test pits (approx. 5'D x 10'W x 15'L - Collect soil samples at bottom of test pit side walls	- 6 test pits along the apparent perimeter of the landfill - 2 test pits along the centerline		8	5 feet	4	32	Bottom of side wall	- Side walls will be screened with PID - Samples to be analyzed for TCL organics & TAL metals
Other	Clearance of vegetation	Vegetation to be cleared along select paths								
	Prepare site map, survey horizontal locations of all new sampling locations, and survey vertical elevations of new monitoring wells	- Survey work will be performed in two phases (first site map, then horizontal and vertical survey)	NA	NA	NA	NA	NA	NA	NA	NA
	Clear all locations for buried metal before starting drilling and test pit excavation	Clearance to be performed in two phases: one for all boring and well locations								
RI-derived wastes	Characterize wastes for disposal	Sample contents of storage tank where IDW water will be stored and sample drums with drill cuttings	One sample from the storage tank and upto five samples from the drums with drill cuttings	NA	6	NA	1	6	NA	Hazardous waste characteristics and Full TCLP

Soil engineering analyses: see table for non-CLP analyses
Groundwater field parameters: Temperature, pH, Eh, conductivity, and dissolved oxygen
Groundwater engineering analyses: see table for non-CLP analyses

Last Revised:
05/20/2002
8:42 PM

Proposed Work Plan Approach and Scope
(contd.)

Task 3 Field Investigation (cont)

Subtasks listed below will not be performed during Phase 1. Propose to include limited hours under each subtask to evaluate whether it needs to be performed during Phase 2.

- A site-wide geophysical survey (subtask 3.2.5) although all boring and test pit locations will be individually cleared for subsurface buried metal.
- A well survey (subtask 3.2.1) since no public supply wells noted within 4 miles of the site.
- Contaminated building samples (subtask 3.2.9) since remaining foundations will be removed as part of any future remedial action.

Task 6 Data Evaluation

Task will include:

- Data entry, tabulation, and plotting of
  - Existing data from 1991 and 1999 EPA site inspections
  - Phase 1 data
- Technical Memorandum (subtask 6.4) will include:
  - Summary of performed activities
  - Description of the site geologic and hydrogeologic conditions
  - Boring and test pit logs and groundwater elevation contour maps
  - Tables and figures presenting sampling results
  - Data quality evaluation
  - Summary of results by media
  - Risk assessment standard tables 1 and 2
  - Ecological screening evaluation
  - Additional data needs and recommendation on approach and scope for Phase 2

Proposed Work Plan Approach and Scope
(contd.)

Task 7 Assessment of Risk

- Human Health Risk Assessment - see table summarizing pathways to be evaluated

  End of Phase 1

  - Prepare RAGS Part D standard tables 1 and 2 (selection of exposure pathways and selection of chemicals of potential concern).
  - Tables will be submitted as part of the Phase 1 Technical Memorandum.
  - Phase 1 data and validated historical data will be used to complete screening assessment.

  End of Phase 2

  - Prepare RAGS Part D standard tables 1 and 6 and the Pathway Analysis Report.
  - Phase 1 and 2 data and validated historical data will be used to complete assessment.
  - After EPA's review and comment, prepare complete human health risk assessment.

- Ecological Risk Assessment

  End of Phase 1

  - Complete Steps 1 through 3 (inclusive of Screening Ecological Risk Assessment and Step 3 Baseline Ecological Risk Assessment)
  - Phase 1 data and validated historical data will be used
  - Steps 1 through 3 will evaluate potential risks associated with both direct exposure and indirect exposure (food web exposure)

  Planning for Phase 2

  - Complete Step 4 (Study Design and DQO), Step 5 (Field Verification of Sampling Design), and Step 6 (Site Investigation)
  - Additional sampling may be proposed to further characterize potential risks indicated in Steps 1 through 3

  End of Phase 2

  - Steps 7 and 8 will be conducted following completion of Phase 2 and will focus on evaluation of the additional data collected during Phase 2

Exposure Pathways to be Evaluated During the Risk Assessment
Diamond Head Oil RI/FS
Kearny, NJ

Media	Exposure Route	Current/Future Trespasser/Visitor Adolescent	Future			
			Industrial/ Office Worker	Construction Worker	Resident[3]	
					Adult	Child
Surface Soil[1]	Ingestion	X				
	Dermal	X				
	Inhalation	X				
Groundwater	Ingestion		X		X	X
	Dermal			X	X	X
	Inhalation			X	X	X
Indoor Air - from Groundwater	Ingestion					
	Dermal					
	Inhalation		X		X	X
Indoor Air - from Soil	Ingestion					
	Dermal					
	Inhalation		X		X	X
Subsurface Soil[2]	Ingestion		X	X	X	X
	Dermal		X	X	X	X
	Inhalation		X	X	X	X

X Quantitative evaluation.

1. Includes top 2 feet of soil.
2. Includes top 12 feet of soil.
3. Although unlikely, future residential use of the site will be evaluated.

Last Revised:
05/20/2002
8:48 PM

Task 2 Community Relations

- CH2M HILL to provide support on as requested-basis
- Attend 2 public meetings and prepare display materials
- Is a change in the SOW needed ?

Task 5 Analytical Support and Data Validation

- Collect, prepare and ship samples (subtask 5.1)
  - Propose to complete as part of Task 3 since these activities are an integral part of the field investigation
- Data validation (subtask 5.3)
  - All sample analyses through CLP and data will be validated
  - Propose not to perform full data validation on non-CLP data since data will not be used for purpose of risk assessment or development of cleanup levels
  - Propose to include some time for review of the non-CLP data by a chemist to determine usability of existing data

Discussion

Issues:

Access to PSEG right-of-way along the east border/DOT

Clearance of vegetation – any wetlands issues with the NJDEP?

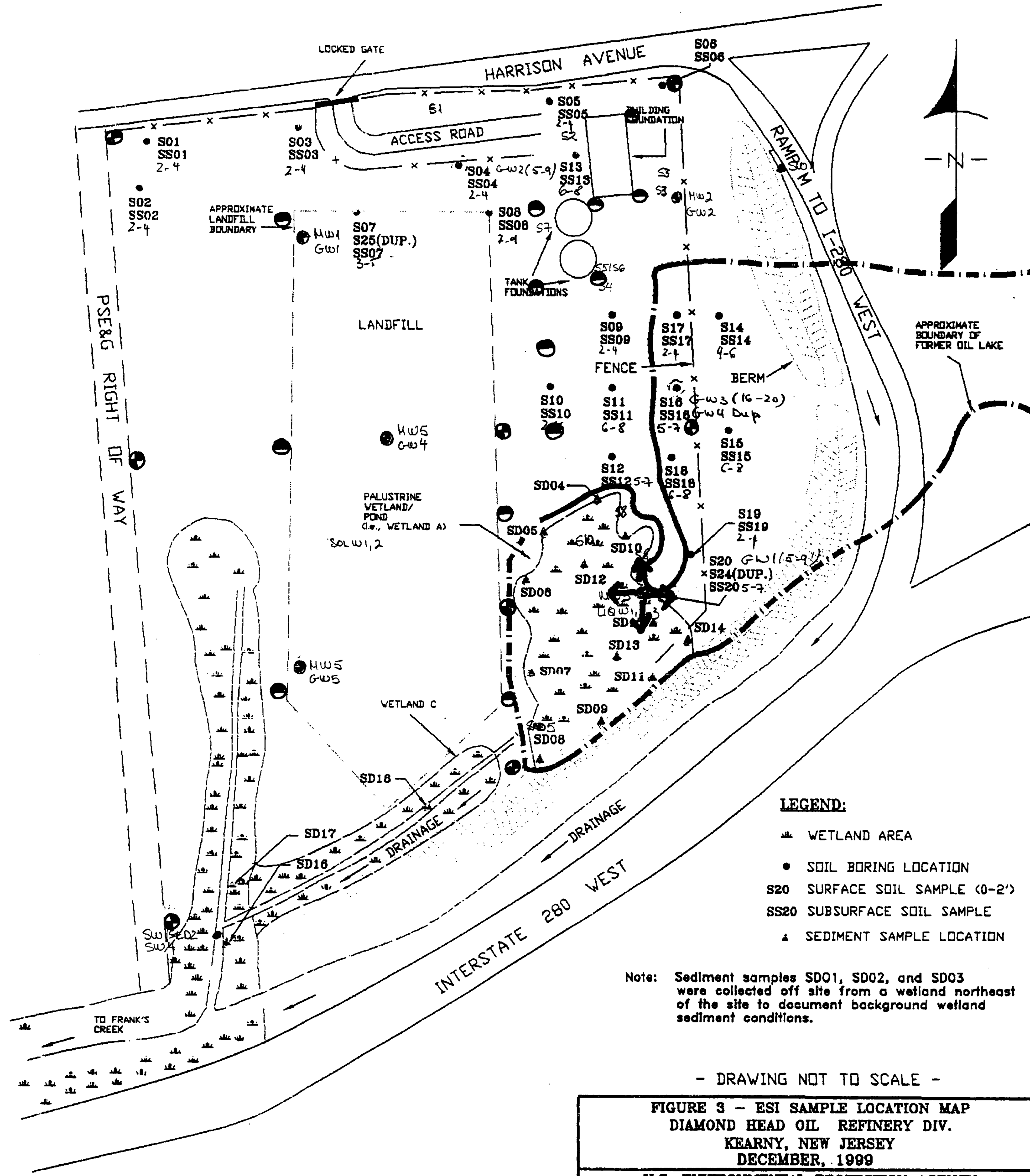
Electronic data availability from previous investigations

Electronic data requirements for this work assignment

Options for Investigating for LNPAL

1. Visual observation of soil cores
2. Visual observation of oil accumulating in piezometers or wells (API 4692 06/99 *Free Product Recovery of Petroleum Hydrocarbon Liquids* has derived a correlation between product thickness in wells and product thickness in formation)
3. Smear test – smear liquid on white paper; oil stains differently than brown water
4. Submersible test (drop soil into water in a jar, agitate, let stand and observe for NAPL)
5. Submersible test with fluorescent light (drop soil into a lighter fuel as a solvent and expose to sample to UV light)
6. Dye testing and observations
7. Fluorescent light observations
8. Immunoassay kits
9. Optical scanning / Laser Induced Fluorescence

SD 1,2,3 Background



LEGEND:

- WETLAND AREA
- ● SOIL BORING LOCATION
- S20 SURFACE SOIL SAMPLE (0-2')
- SS20 SUBSURFACE SOIL SAMPLE
- ▲ SEDIMENT SAMPLE LOCATION

Note: Sediment samples SD01, SD02, and SD03 were collected off site from a wetland northeast of the site to document background wetland sediment conditions.

- DRAWING NOT TO SCALE -

FIGURE 3 – ESI SAMPLE LOCATION MAP
DIAMOND HEAD OIL REFINERY DIV.
KEARNY, NEW JERSEY
DECEMBER, 1999

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
CONTRACT# 68-W5-0019

WESTON
Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION

IN ASSOCIATION WITH TETRA TECH EM, INC., C.C. JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC., R.E. SARRIERA ASSOCIATES, AND GRB ENVIRONMENTAL SERVICES, INC.

DRAWN BY :	J. HAMPTON JR.
EPA TASK MONITOR:	B. CONETTA
START PROJECT MANAGER:	D. FOERTER

D:\CADFILE\4630smp.DWG

1991 SI 4 gw 3 sw 3 sed 7 ss 1 sss 3 lw 2 sw Valid Sum Data sheets not in package

1999 SSI 20 SB [15 0-2' / 15 SS varies] 15 sed + 3 Background sed + 3 gw Valid No sum Data sheets in package

Clearance of vegetation

- Monitoring wells installed to max depth of 20' (assumed depth of pit layer). Soil sampling during boring installation – 9 wells
- Soil borings installed to max depth of 20' with soil sampling – 12 borings
- Soil borings installed to max depth of 20' radially from HW3 for LNAPL delineation with soil sampling – 12 borings